

WHAT IS CLAIMED IS:

1. A pad conditioner comprising:
an abrasive disk comprising an abrasive surface and a second surface opposite said abrasive surface; and
an undulating disk having an undulated surface proximate said second surface of said abrasive disk, said undulating disk comprising at least one raised portion and at least one recessed portion;
wherein said abrasive disk is releasably affixed to at least a portion of said recessed portion to form an undulated abrasive surface.
2. The pad conditioner of claim 1 wherein said pad conditioner is a chemical-mechanical planarization pad conditioner.
3. The pad conditioner of claim 2 wherein said undulating disk further comprises an undulating plate and a backing plate.
4. The pad conditioner of claim 2 wherein said abrasive disk further comprises a substrate and an abrasive layer.
5. The pad conditioner of claim 4 wherein said substrate is more flexible than said undulating disk.
6. The pad conditioner of claim 5 wherein said substrate is formed from polycarbonate.
7. The pad conditioner of claim 4 wherein said substrate is releasably affixed to said recessed area with at least one removable fastener.
8. The pad conditioner of claim 7 wherein said substrate further comprises a quantity of indexing holes, said undulating disk further comprises a quantity of substrate

mounting holes, and said substrate mounting holes and said indexing holes are configured for said removable fastener.

9. The pad conditioner of claim 8 wherein said quantity of indexing holes is at least two times said quantity of substrate mounting holes.

10. The pad conditioner of claim 2 wherein said abrasive disk comprises a sintered abrasive layer.

11. The pad conditioner of claim 2 further comprising at least three said recessed portions.

12. The pad conditioner of claim 11 wherein said undulating disk comprises a patterned undulated surface.

13. The pad conditioner of claim 12 wherein said patterned undulated surface has a step pattern.

14. The pad conditioner of claim 12 wherein said patterned undulated surface comprises an offset in range from about 0.25 mm to about 0.75 mm.

15. The pad conditioner of claim 12 wherein said raised portion is in a range from about 33 percent to about 66 percent of the area of said patterned undulated surface.

16. A method of conditioning a polishing pad comprising:
contacting said pad with an abrasive article comprising an abrasive disk and an undulating disk that forms an undulated abrasive layer; and
moving said abrasive article relative to said pad to modify a surface of said pad.

17. The method of claim 16 wherein said undulated abrasive layer comprises an offset in a range from about 0.25 mm to about 0.75 mm.

18. The method of claim 16 further comprising the step of indexing said abrasive article by rotating said abrasive disk relative to said undulating disk.

19. The method of claim 16 further comprising the step of adjusting the offset of said undulated abrasive layer of said abrasive disk.

20. The method of claim 16 wherein said abrasive disk is affixed to said undulating disk with at least one removable fastener.